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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/591,581	01/25/2007	Takashi Udagawa	Q80423	3372

23373 7590 11/26/2010

SUGHRUE MION, PLLC
2100 PENNSYLVANIA AVENUE, N.W.
SUITE 800
WASHINGTON, DC 20037

EXAMINER	
SAYADIAN, HRAYR	

ART UNIT	PAPER NUMBER
2814	

NOTIFICATION DATE	DELIVERY MODE
11/26/2010	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

sughrue@sughrue.com
PPROCESSING@SUGHRUE.COM
USPTO@SUGHRUE.COM

Office Action Summary	Application No.	Applicant(s)	
	10/591,581	UDAGAWA, TAKASHI	
	Examiner	Art Unit	
	Hrayr A. Sayadian	2814	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 September 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-6 and 8-15* is/are pending in the application.

4a) Of the above claim(s) *12,14 and 15* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) *1-6, 8-11 and 13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *7/29/2010*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED OFFICE ACTION

Applicant's Election

1. The 3/3/2010 Reply elected, without traverse, Species B for prosecution on the merits.

The Reply identified claims 1-11 and 13 as being directed to the elected invention.

Accordingly, Examiner has withdrawn claims 12, 14, and 15 from further consideration as being drawn to non-elected inventions. See 37 CFR § 1.142(b).

The Election Requirement and its finality are proper, and they are therefore maintained.

Information Disclosure Statement

2. This communication includes Examiner signed copies of the PTO-1449s submitted with the 7/29/2010 IDS.

35 U.S.C. § 103 Rejections of the Claims

3. The following is a quotation of 35 U.S.C. § 103(a), the basis for the obviousness rejections in this Office Action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section § 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-6, 8-11 and 13 are rejected under 35 U.S.C. § 103(a) as being unpatentable over International Patent Document WO 2003/065465 to "Udagawa." U.S. Pat. No. 7,465,499 to "Udagawa" is provided as a US equivalent publication.

Udagawa discloses the following limitations of the claims.

For example, with respect to claim 1, Udagawa discloses a boron phosphide-based semiconductor light-emitting device (see, for example, FIG. 5) comprising: a substrate (101) of silicon single crystal; a first cubic boron phosphide-based semiconductor layer (103) that is provided on a surface of the substrate and contains twins; a light-emitting layer that is composed of a hexagonal Group III nitride semiconductor (104) and provided on the first cubic boron phosphide-based semiconductor layer; and a second cubic boron phosphide-based semiconductor layer (105) that is provided on the light-emitting layer, contains twins and has a conduction type different from that of the first cubic boron phosphide-based semiconductor layer.

The diffusion of phosphorus atoms into the light emitting layer 104 will result in the recited profile.

The first and second boron phosphide layers surrounding the light emitting layer have different bandgaps and lattices from that of the light emitting layer.

The art moreover well recognizes the importance of smoothing the transition at heterojunctions to avoid lattice mismatch resulting in damage to the light emitting layer. And managing the phosphorus content is one way of doing this. The phosphorus concentration therefore is an art recognized critical parameter.

According to well-established patent law precedents (see, for example, M.P.E.P. § 2144.05II) therefore it would have been obvious to a person of ordinary skill in the art at the time of the invention of this application to have optimized (for example by routine experimentation) the concentration of phosphorus to smooth the lattice transition at the heterojunctions around the light emitting layer.

With respect to claim 2, for example, the recitation does not require the surface of the substrate to be 111, and any substrate of single crystal cubic lattice structure would have a 111 plane.

With respect to claim 3, see the abstract.

With respect to claims 4 and 9, the twinning surfaces in the poly-crystals have 111 twins having 111 crystal plane in a junction with the single crystal substrate (as recited in claim 4) and with the light emitting layer (as in claim 9).

With respect to claims 5 and 10, Udagawa discloses the very same procedure to produce the layers 103 and 105 and notes they would be p and n type, undoped. See also FIG. 7.

With respect to claims 6 and 8, the light emitting layer has a [-2110] direction (it is a crystal and there will be a plane with any direction) and it will be aligned with the [110] direction of at least one of the many micro-crystals forming the first and second BP layers. The recitation "and has a (0001) crystal plane serving as a front surface" is met because the light emitting layer is a crystal and it will have such a surface, which will be a front surface, absent defining the scope of front surface.

With respect to claim 11, the material forming the layers 105/103 are disclosed to have energy bandgap of 3 eV.

With respect to claim 13, light goes through the second/top layer 105.

Double Patenting Rejections of the Claims

5. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer complying with 37 CFR § 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR § 3.73(b).

6. Claims 1-6, 8-11, and 13 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims of Udagawa.

Although the conflicting claims are not identical, they are not patentably distinct from each other because claims of Udagawa anticipate claims of this application. For example, the pending claims would be obvious (see explanation of rejection above) over claim 5 of Udagawa.

Response to Arguments

7. The arguments in the 9/10/2010 "Reply" have been fully considered. These arguments however are not found persuasive.

The Reply argues that amended claim 1 distinguishes over the applied art because the applied art does not disclose details of the profile as described in the specification.

In Response, Examiner notes that this contention is directed to the detailed description rather than a limitation in a claim.

Although the detailed description may be used to understand recitations in a claim, only limitations in a claim limit scope of the claim and thus distinguish over the prior art. See, for example, *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993) (recognizing that the claims are interpreted in light of the specification, but noting

that limitations from the specification are not read into the claims); see also M.P.E.P. § 2111.01II, and the precedents cited therein.

The Reply also argues that the applied art fails to disclose the concentration of phosphorus as now recited in claim 1.

In response, Examiner notes that concentration of phosphorus is an art recognized critical parameter, which therefore would have been obvious to optimize, as explained in the rejection.

Accordingly, rejecting the claims as being unpatentable over the prior art is proper and it is therefore maintained.

CONCLUSION

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office Action. Accordingly, **THIS OFFICE ACTION IS MADE FINAL**. See M.P.E.P. § 706.07(a).

A shortened statutory period for reply to this Office Action is set to expire THREE MONTHS from the mailing date of this Office Action. Extension of this time period may be granted under 37 CFR § 1.136(a). **The maximum period for reply, however, is SIX MONTHS from the mailing date of this Office Action**.

If a first reply is filed within TWO MONTHS of the mailing date of this Office Action and the advisory Office Action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory Office Action is mailed, and any extension fee pursuant to 37 CFR § 1.136(a) will be calculated from the mailing date of the advisory Office Action.

Any inquiry concerning this communication or earlier communications from an Examiner should be directed to Examiner Hrayr A. Sayadian, at (571) 272-7779, on Monday through Friday, 7:30 am – 4:00 pm ET.

If attempts to reach Mr. Sayadian by telephone are unsuccessful, his supervisor, Supervisory Primary Examiner Wael Fahmy, can be reached at (571) 272-1705. The fax

phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available only through Private PAIR. For more information about the PAIR system, see http://pair-direct.uspto.gov. The Electronic Business Center (EBC) at (866) 217-9197 (toll-free) may answer questions on how to access the Private PAIR system.

/Hrayr A. Sayadian/
Primary Examiner, Art Unit 2814
1-571-272-7779